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## ABSTRACT

This newsletter issue provides an overview of the book, "Critical Thinking about Critical Periods," which discusses the neural and behavioral sciences that undergird the notion of "windows of opportunity" in early brain development. The issue presents the book's table of contents; the major sections are: (1) "Critical Periods: An Overview of Behavior and Biology"; (2) "Critical Periods in Basic Sensory Systems"; (3) "Critical Periods in Social and Emotional Development"; (4) "Critical Periods in Language Learning and Acquisition"; and (5) "Early Intervention and the Relevance of Critical Periods"). The issue also offers several implications for research--such as the need for research to determine when "windows" generally open for specific skills. The issue concludes with a brief section on the importance of appropriate experiences in early childhood excerpted from the book's concluding chapter. (EV)

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# NCEDL Spotlights

No. 31 February 2001

## Book examines critical periods

*This Spotlight is based on Critical Thinking About Critical Periods, a new 300-page book that is an outgrowth of a national working conference sponsored by NCEDL. Published by Brookes Publishing Co., Baltimore, the book is edited by Donald B. Bailey of the Frank Porter Graham Child Development Center at UNC-Chapel Hill, John T. Bruer of the James S. McDonnell Foundation of St. Louis, MO, Frank Symons of the University of Minnesota, and Jeff W. Lichtman of Washington University School of Medicine, St. Louis, MO.*

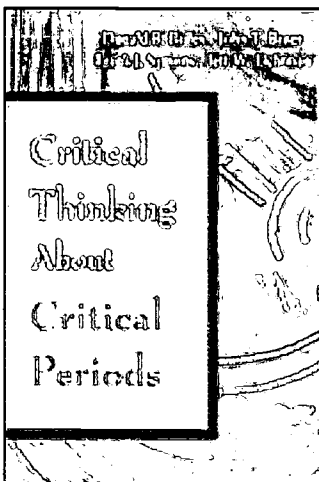
### 'Windows of opportunity:' What do we really know?

*Critical Thinking About Critical Periods*, the third book by NCEDL, presents a critical discussion of the neural and behavioral sciences that undergird the notion of "windows of opportunity" in early brain development.

The preface states, "One could distill popular understanding of the importance of brain science for child development in a single sentence: Following birth there is a period of rapid brain reorganization that is *a/the* critical period in brain development during which children are most sensitive to environmental stimuli.

"Parents, educators, policy makers, and early childhood advocates share, with greater or lesser understanding, this concept of critical 'windows of opportunity' early in development. Although the current interest in the implications of neuroscience for child and human development should be applauded, popular understand-

ing of this developmental and neuroscientific phenomenon is not entirely consistent with what is now known about critical periods."



### Table of contents

#### I. Critical Periods: An Overview of Behavior and Biology

1. A Critical and Sensitive Period Primer...  
John T. Bruer
2. Developmental Neurobiology Overview: Synapses, Circuits, and Plasticity... Jeff W. Lichtman

#### II. Critical Periods in Basic Sensory Systems

3. Critical Periods in the Development of the Visual System by Jonathan C. Horton
4. Critical Periods for Development of Visual Acuity, Depth Perception, and Eye Tracking by Lawrence Tychsen

#### III. Critical Periods in Social and Emotional Development

5. Sensitive Periods in Attachment?  
by Ross A. Thompson
6. Animal Modes of Critical and Sensitive Periods in Social and Emotional Development by Maria L. Boccia and Cort Pedersen
7. Social and Emotional Development in Children Adopted from Institutions by Elinor W. Ames and Kim Chisholm

#### IV. Critical Periods in Language Learning and Acquisition

8. Language Processing: How Experience Affects Brain Organization by Helen J. Neville and John T. Bruer
9. Sensitive Periods in First Language Acquisition by Heather Bortfeld and Grover J. Whitehurst
10. A Critical Period for Second Language Acquisition by Kenji Hakuta

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### V. Early Intervention and the Relevance of Critical Periods

11. The Subtle Science of How Experience Affects the Brain by John T. Bruer and William T. Greenough
12. Critical Periods and Early Intervention
13. The Concept of Critical Periods and Their Implications for Early Childhood Services by Robert B. McCall and Bradford W. Plemons
14. Critical Periods: Reflections and Future directions by Donald B. Bailey and Frank J. Symons.

### Implications for research

- Different windows open at different times. Research is needed to clarify when windows of opportunity generally open for certain specific skills, and this information needs to be available to parents and teachers in a much more accessible format.
- Each child follows a unique development course. Research is needed on how best to identify individual opportunities for learning, and tools are needed that parents and teachers can use with individual children.
- There is no point in trying to teach something if the window is not yet open. We need research that helps us understand the potential negative consequences of too much stimulation of the wrong type, and this information needs to be made more accessible for families and teachers.
- Inequity exists in our society to the extent to which children have opportunities for access to various experiences after certain windows open. Research is needed on effective programs that help eliminate such societal inequities, and policies need to be enacted that make such programs a reality.

### Affirming the importance of appropriate experiences

(Excerpts from chapter by Drs. Donald B. Bailey and Frank J. Symons)

This book continues to affirm the importance of appropriate experiences during the early childhood years. Indeed, as the first period during which human have extensive interactions with and feedback from the environment, the early childhood years constitute our first opportunity as parents and as a society to influence development.

Although opportunities for influence continue throughout the life span, they begin during early childhood; and, thus, early childhood constitutes a period during which we should pay close attention to what children experience and how these experiences shape later development.

The real issue is the vast differences in opportunities for children today to develop needed skills, even though the window of opportunity for this development is quite long. Children living in impoverished and other high-risk environments often miss out on important learning opportunities provided for more advantaged children in today's society, putting them at risk for substantial delay in development and setting a pattern of educational failure that is difficult to overcome. Thus, while we contend that there is no magical critical period, early intervention for children at risk of school failure remains an important national goal.

As research continues and new possibilities for early intervention evolve, the intersections between basic brain science and the behavioral and social sciences will become busy places full of promises and pitfalls. Intervention work will continue to be one of the most visible contexts for exploring the difficult questions raised by basic researchers and seized on by policy makers.

The next generation of research should not focus so much on trying to prove that critical periods do or do not exist, because this will be virtually impossible to determine, but rather on what is the nature of developmental risk in today's society that potentially could be addressed through programs of prevention and education.

### OERI ■ National Educational Research Centers

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